

REMARKS

Claims 29 and 80-159 were pending. Of these, Claims 92-110 and 132-150 were previously withdrawn from consideration. Claims 29, 80-91, 111-131 and 151-159 stand rejected. Claim 29 has been canceled. Therefore, Claims 80-159 are currently pending in this application. The applicants request further examination and reconsideration in view of the remarks set forth below.

The specification and claim 158 have been amended to correct minor informalities. No new matter has been entered.

Rejections under 35 U.S.C. § 102(e):

The examiner has rejected Claim 29 as being anticipated by U.S. Patent No. 6,172,672 to Ramasubramanian et al. (hereinafter “Ramasubramanian”). In response, the applicants have canceled Claim 29.

The examiner has rejected Claims 80-83, 87-91, 120-123 and 127-131 as being anticipated by U.S. Patent No. 5,978,835 to Ludwig et al. (hereinafter “Ludwig”). The applicants respectfully traverse the rejection.

The present invention is directed towards a method of manipulating digital video data. This is to prepare the digital video data so that it can be presented in a non-sequential manner. As explained in the Background section of the applicants’ disclosure, digital video data is typically stored in a format that makes such non-sequential presentations difficult. For example, in the MPEG format, video information is stored in a binary file. The video information represents a sequence of video frames. An MPEG encoder creates the binary file by encoding each video frame into one of three data formats: Inter-frame (“I-frame”), Predicted-frame (“P-frame”) and Bi-directional-frame (“B-frame”) data. I-frame data contains all of the information required by an MPEG encoder to completely recreate a frame. An MPEG decoder uses information from more than one frame to recreate a B- or P- frame. These and other characteristics of MPEG digital frame formats allow a large amount of audio-visual information to be stored in a relatively small amount of storage space. However, these same characteristics make it difficult to play the audio-visual content in anything but a strict sequential manner.

If a video data source is to send information to a recipient in a non-sequential manner, the encoding of the video frames must be taken into account. For example, if an MPEG video pump simply jumps from one point in the MPEG file to another point, MPEG packaging information will be lost and the client will not be able to properly decode the data. Applicants' disclosure at page 29, line 22 to page 30, line 5. As another example, where received packets are not sequentially located within an MPEG file, timestamps associated with the packets will not be sequential; as a result, discontinuity between the timestamps may be sufficient to cause the client to terminate normal playback. Applicants' disclosure at page 33, lines 7-14. In addition, MPEG client buffers are typically provisioned under the assumption that the incoming MPEG video data will never contain two sequential I-frames; if a jump operation causes two I-frames to be received in sequence, the buffer may overflow and the decoder may fail. Applicants' disclosure at page 34, line 19 to page 35, line 3. Though the details may differ, the problems associated with sending video data in a format other than MPEG in a non-sequential manner are analogous to the problems associated with sending MPEG video data in a non-sequential manner. The claimed invention is directed towards addressing these problems.

A principal aspect of the present invention is the generation of tag data. Tag data is control information that is used to implement non-sequential playback of digital video data. Applicants' disclosure, page 15, lines 22-24. The tag data includes data representing the start position for frame data and other frame related data. The start position of a particular frame is the location within the audio-visual data of the first byte of the data that corresponds to the particular frame. Applicants' disclosure, page 20, table 2, row 3. This is used to determine a position within the video file at which playback resumes after a jump. Applicants' disclosure, page 25, line 19 to page 26, line 2. The tag data also includes other frame related data that is used to implement non-sequential operations while avoiding the problems discussed above. Applicants' disclosure, page 15, line 22 to page 16, line 4; see also page 19, line 18 to page 25, line 9.

Thus, Claim 80 recites: a method of manipulating digital video data comprising accessing digital audio-visual data, representing an audio-visual work and including data for a plurality of video frames; determining a start position for frame data representing each of the plurality of frames; generating tag data including data representing the start position and other

frame related data for each of the plurality of frames; and storing the tag data separate from the digital audio-visual data.

Ludwig is directed towards multimedia mail, conference recording and documents in video conferencing. Ludwig, Title. Ludwig discloses recording a multimedia collaboration among multiple participants of a video conference to create a multimedia document that includes recorded audio and video, shared windows, telepointing and annotation that occurred during the video conference. Ludwig, column 33, lines 39-50. The multimedia document includes a structural and timing component that captures the identities, detailed dependencies, references to and relationships among the various components of the multimedia document. Ludwig, column 28, lines 15-30. Figure 30 of Ludwig shows that the various components of the multimedia document are audio and video segments, graphics, text, images, links and references. The structural and timing component includes temporal synchronization information to allow window events to be synchronized with an audio-video sequence. Ludwig, column 28, lines 51-56; column 29, lines 59-61. To accomplish this, each video sequence is assigned time codes at 1/30 second intervals or video frame numbers. Ludwig, column 29, lines 54-58. Thus, Ludwig discloses adding limited information to video sequences to allow recorded window events to be replayed in synchrony with the video sequences. Ludwig, column 29, lines 59-64.

The examiner stated that determining a start position for a frame is inherent in Ludwig and that generating tag data for each frame is apparent from Ludwig. The applicants respectfully disagree.

Ludwig does not suggest or disclose the determination of a start position or the generation of tag data, as is recited in the applicants' Claim 80. While Ludwig discloses assigning 1/30 second time codes or frame numbers to a video sequence, at most, this would identify a frame rather than a start position for the frame data. As explained above, however, the start position is needed for non-sequential access. Further, as explained above, Claim 80 recites other frame related data, in addition to the start position, which enables the non-sequential access to the video frames. While Ludwig refers to assigning time codes or frame numbers as 'tagging,' this is not the same as the tag data recited in Claim 80 and simply does not provide enough information for non-sequential access to video data. Rather, the synchronization component of Ludwig only provides sufficient information for the video sequences to be synchronized with

window events, which is the purpose for its inclusion by Ludwig. This is apparent because Ludwig did not contemplate nor address the unique problems associated with providing non-sequential access to audio-visual data. Thus, Ludwig does not suggest or disclose providing non-sequential access to audio-visual data. In contrast, the applicants have solved the unique problem of providing non-sequential access to audio-visual data by the determination and generation of tag data, including the start position and other frame related data for each frame, as is recited in Claim 80. Claim 80 is allowable for at least these reasons.

Further, the applicants respectfully submit that the examiner's rejection of Claim 80 on the grounds that the step of determining a start position is inherent from Ludwig is improper. In order to properly reject a claim on grounds of inherency, the examiner must provide a rationale or evidence tending to show inherency. Manual of Patent Examining Procedure, Section 2112. The examiner has provided no such rationale or evidence for this alleged inherency.

As shown above, Claim 80 is patentably distinguishable from the prior art as represented by Ludwig. For at least this reason Claim 80 is allowable. Claims 81-83, 87-91 are allowable at least because they are dependent from allowable Claim 80.

Claim 120 recites an audio-visual information delivery system for managing the display of an audio-visual work comprising a source of digital audio-visual data representing of an audio-visual work for display, the digital data including frame data representing a plurality of the video frames; a tag data generator for generating, for each video frame, tag data representing a start position and other frame related data for each of the plurality of frames; and a storage for the tag data, separate from the digital audio-visual data source. As explained above, Ludwig does not suggest or disclose generating tag data representing a start position and other frame related data for each of a plurality of frames. Claim 120 is allowable for at least this reason. Claims 121-123 and 127-131 are allowable at least because they are dependent from allowable Claim 120.

Rejections under 35 U.S.C. § 103(a):

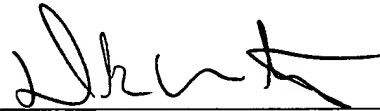
The examiner rejected Claims 84-86, and 124-126, as being unpatentable over Ludwig. In addition, the examiner rejected Claims 111-119, as being unpatentable over Ludwig in view of Ramasubramanian.

The applicants respectfully traverse the rejection. As explained above, Claims 80 and 120 are allowable over Ludwig. Ramasubramanian does not suggest or disclose the claimed features that are missing from Ludwig. Accordingly, Claims 84-86, 111-119 and 124-126 are allowable.

In view of the above, the applicants respectfully submit that all of the pending claims that are not withdrawn are now allowable. Allowance at an early date would be greatly appreciated. Should any issues remain, the examiner is encouraged to telephone the undersigned at (408) 293-9000 to discuss the same so that any outstanding issues may be expeditiously resolved.

Law Offices of Derek J. Westberg

Dated: August 3, 2004

A handwritten signature in black ink, appearing to read 'Derek J. Westberg', written over a horizontal line.

Derek J. WESTBERG (Reg. No. 40,872)